SIXTEENTH REPORT

OF THE

Board of Water Commissioners

TO THE

MAYOR AND COMMON COUNCIL

OF

JERSEY CITY,

WITH ACCOMPANYING DOCUMENTS,

TO JULY 1, 1863.

JERSEY CITY:
PRINTED BY JOHN H. LYON.
1864.

BOARD OF WATER COMMISSIONERS,

May 1st, 1863, to May 1st, 1864.

JACOB R. WORTENDYKE, *President.*
EPHRAIM PRAY,
N. D. TAYLOR,
GEORGE McLAUGHLIN,
WILLIAM CLARKE, *President of the Common Council and ex-officio Water Commissioner.*

OFFICERS:

Superintendent and Engineer,
ROBERT C. BACOT.

Registrar,
GARRET S. BOICE.

Assistant Registrar,
ISAAC F. BOICE.

Water Purveyor,
ROBERT B. COAR.

Engineer at Pumping Works,
ROBERT S. OSBORN.

First Assistant Engineer,
WILLIAM KEARNEY.

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SIXTEENTH REPORT.

OFFICE OF THE WATER COMMISSIONERS,
JERSEY CITY, July, 1863.

To the Honorable the Mayor and Common Council of Jersey City:

GENTLEMEN:—By a supplement to the water acts, approved March 17th, 1862, the usual January report from this board is dispensed with. A general report is therefore now due, annually, instead of semi-annually, as heretofore. This change will hereafter enable us to present the operations of an entire year in connection.

The present report relates to the work and results of the year ending June 30th, 1863, which are set forth in the subjoined papers from the superintendent and engineer and the registrar, to an examination of which documents we refer for an orderly and full exhibit of all that necessarily pertains to the yearly communication directed by law to be made to you by this board.

The report of Mr. Robert S. Osborn, the engineer in charge of the engines at Belleville, to his superior, the superintendent and engineer, will be found appended to the report of the latter to us; it presents matters of interest connected with the particular sphere of service to which his duties extend.

The year covered by this report has required an unusual amount of labor and personal attention from the members of the board, and the utmost activity and diligence on the part

of its officers. The unremitted perseverance of the latter in executing the measures adopted by the commissioners for the advancement of the condition of these works to a position demanded by the interests of the city, has enabled the board successfully to accomplish, within the year, a large proportion of the undertakings indicated in our last report.

It was announced in the report of July, 1862, that extensive repairs and enlargements had been determined on and commenced. Important portions of the structures at Belleville required immediate repairs and partial renovation to prevent them from falling rapidly into ruin or dilapidation. These repairs and renovations have been in progress throughout the greater part of the year, and have been made under the constant personal supervision of the superintendent and engineer and the members of the board. We have had in view the greatest attainable durability consistent with a reasonable expenditure, and we can confidently point you to the result of our efforts in this behalf. These repairs relate chiefly to the engine and boiler houses, the gate houses at the reservoir, and they have extended in some degree to other portions of the original works. The report of the engineer states more definitely what the nature of these repairs has been.

This work has required the appropriation of a large sum of money from the current revenue of the works, as was anticipated.

While we have been sensible of our obligations to prevent any misapplication of funds and to exercise continued scrutiny over expenditures, we have not refrained from bestowing upon these repairs so far as we have progressed in them, whatever of expense and labor we deemed reasonable and needful to ensure permanence and efficiency. Any system coming short of this end ought not to be satisfactory to the people of the city, and would not have been consistent with real economy.

The works are now furnished with two Cornish pumping engines each of which can without difficulty raise over 4,000 gallons of water per minute into the receiving reservoir, at Belleville.

It has not yet become necessary to work both the engines at the same time to raise the requisite quantity of water; but the insufferable peril of depending for our whole supply upon a single pump liable at any moment to accident and disability, has been abated—at least so far as common prudence would demand.

But this board takes this occasion to say once for all, that so far as the large expenditures for repairs are concerned upon these works, they have been rendered necessary sooner than the public had reason to expect; and that, as in almost all similar enterprises elsewhere, so here, premature dilapidation and threatened ruin to some of the most vital and expensive parts of the works, have early disclosed the ultimate wastefulness of building any portion of works so severely exposed to the elements, and the operations of almost unmeasurable power, with materials, and upon plans looking to cheapness or fancy more than to solidity and durability. Had the effects of such mistakes not been arrested by us now, it is quite certain that in less than five years the repairs that may already have cost us over $20,000, would have required double that amount. We have no further apology to offer for these repairs, than that they were necessary for the preservation of valuable and costly parts of the works.

We have spared nothing that was needful to arrest these difficulties and nothing has been appropriated that was not suitable and commensurate with what we were sure were the demands of the city's interests in preservation of its property.

How much farther these premature dilapidations are to extend upon other parts of the works still unfallen or undecayed, it is unnecessary for us to now to conjecture. It is not impossible that some things of an untried nature, undertaken by this board, may be liable to similar objections. But so far as we have had any apprehensions of possible disappointment in such matters, we have endeavored to secure ample indemnity from contractors. By reading carefully the reports of the engineer and superin-

tendent of the present and the former years, it will readily be discovered what has been done and is now in progress under this head. Occasion may hereafter arise for us to go more into detail upon this subject.

Had not the insufferable and ruinous abuses of the delivery of water been arrested, in certain quarters, by the introduction and stringent enforcement of the metre system, this city would long ago have been in a deplorable and destructive destitution from an inadequate supply of water at many places. We have now in our official archives a record of particulars under this head that is appalling, and demonstrates that the opponents of the metre system are either blind to the nature of the question, or else that they are determined, at all hazards, to use these works as they please for their own indulgence, and at the expense of the great bulk of the people by whom the burden of sustaining the works is borne. One of the alternatives is clearly and unmistakeably involved in the question, and it remains for the people of Jersey City to decide, whether they will insist upon common commercial equality in this matter, or go back to a system which practically robs one class of people, in order to afford means to another class to riot in the capricious waste and destruction of water, to no useful purpose, without paying for such excesses. For, let it be remembered that every gallon of water delivered costs a certain price in money, and that the aggregate must be paid for by the people; whether they pay in just proportions throughout, or whether a part of them are made to contribute towards the cost of the wantonness and wastefulness of another class.

With a supply that ought and would, with the greatest ease, have been abundant for at least four years to come, affording at the same time the luxurious quantity to every body, allowed by our present rules*; if the same could have

* By the rules adopted February 16, 1863, sixteen gallons daily are allowed for every dollar paid annually as a building tax. The family whose annual water rent, rated by the building they occupy, is $15, is entitled to 240 gallons daily—and thus in proportion, as the tax paid is more or less. For the excess of water used beyond this allowance, one cent per 100 gallons of such excess is due.

been universally enforced, at the outset, we could have gone on without an enlargement for that time, and have cancelled, probably, $100,000 of the water debt. As it was, we were driven into the enlargement over a year ago, and have been compelled to urge it forward with the utmost diligence ever since, in order to meet the draft upon the reservoirs. And we are very certain that the timely application of metres, even to a limited extent, has alone enabled us to avoid partial destitution hitherto. We can now give the assurance that, in the absence of unlooked for accidents, we shall be enabled to meet every proper demand for water, until the enlargements now in progress are complete. It is upon this enlargement of the works by putting down an additional main of 36-inch in diameter, between Belleville and Bergen Hill, that we are now diligently and constantly engaged. This work is completed up to the west bank of the Hackensack river. How it is done, as to permanency and solidity, can not now be seen by a superficial observer, but the descriptions of it are contained in this and the former reports of the engineer. As to the cost, and the per centage for incidental expenses attending it, we do not believe that any public work of that magnitude has ever been performed anywhere on more beneficial terms for the public. The figures and details which will by and by come before you, will enable you to judge for yourselves. We intend this work so undertaken, and thus far continued, shall be completed in the best manner we can contrive for permanency and economy. We intend that besides the single supply main between the Bergen Hill reservoir and Jersey City, already insufficient to give a proper pressure at times in the easterly and more distant points of the city, shall be duplicated by a second supply main, leading from the Bergen Hill reservoir through Newark avenue into the city. This will equalize the head, and afford all needed protection against interruption or accident to the old supply pipe, now barely sufficient to serve the city. It is intended that a better security shall be provided against accident, and heavy annual expenses for repairs at the crossing of the

Hackensack river. We shall probably leave the mode of accomplishing this an open question until the rest of the new main has been provided and laid, deeming it desirable to extend our investigations into this subject as widely and as carefully as is possible. We cannot, therefore, now indicate upon what plan of crossing the river the board will finally determine. In the meantime we shall avail ourselves of the union of the two mains at the west bank of the Hackensack, and thus add something like three quarters of a million of gallons to the daily delivery into the Bergen Hill reservoir.

The necessity of two compartments at Bergen Hill for the storage of water was foreseen by Mr. Whitwell, the chief engineer in 1851, as appears by his report of December of that year. The accuracy of his views in this respect has become every year more and more apparent; and aside from the prudence of providing a larger storage capacity in view of accidents to other parts of the works, there are other reasons to urge the provision of an additional reservoir.* The present report of the engineer will clearly demonstrate that such addition will at no very distant day become indispensable. It is therefore much to be regretted that the present reservoir had not been constructed in two compartments, as Mr. Whitwell advised, and still more that the ground for an extension of storage capacity had not been secured at Bergen Hill while land was cheap. Should such an extension of reservoir room at Bergen Hill be contemplated as a necessity, it might not be injudicious for obvious reasons to secure the necessary ground for it soon.

We look forward to the completion of the enlargements now in progress with the assurance that we shall then have, perhaps, as complete and reliable works as any on the

* In Mr. Whitwell's report, December 9, 1851, submitted to the Legislature by the commissioners who reported a plan for the works, he says—"The reservoir will be divided by a wall of brick masonry into two compartments, having a gate or weir for admitting the water from one to the other, by which arrangement one division may be cleaned, while the other continues to supply the pipes."—Book of reports, p. 80.

continent; and at a cost compared with capacity and extent and character of construction far below any similar works that we have heard of. And if successful in our designs, we shall, in a year or two, be able to assure the people and property holders of Jersey City that their interests in this behalf are as secure as ordinary foresight can make them.

We must not refrain from reiterating what has often been referred to before, that though our works, when completed, will be of a capacity to afford an abundant supply for many years to come, and at a less cost than was anticipated by many, yet that the financial part of the problem depends for its solution mainly upon the enforcement of the rules of consumption. As to private consumers, these rules will upon inspection be acknowledged by every individual of candor and fairness, to afford a supply more than abundant for every conceivable legitimate purpose, whether of use or of waste; and as to the larger consumers they certainly ought not to expect, and for the most part they do not expect nor ask, that they should have the water at less than the present charges to them. Upon this basis we are now successfully operating these works and have accumulated about $39,000 in the sinking fund for redemption of funded debt. Before any other expensive enlargement will be needed, from half a million to three quarters of a million of dollars of this funded debt can assuredly be redeemed without increasing the water tax. But if we are to fail to hold on to this system of supply or a similar one to consumers, the people of Jersey City may as well conclude that their water debt will interminably increase faster than they can redeem it, provided the water tax on property is not to be be increased beyond the present rates. We have now before us the evidence of the correctness of these views from very many official sources; and there is no wisdom in closing our eyes to the force of demonstration. And if we had no better illustrations, our own official statistics, and the recorded observations of the last three years now in this office, would be enough to awaken solicitude upon the subject. We are bound to look not to the passing time alone, but to the future of our

city. Let not a lawless waste of water without compensation compel a second enlargement prematurely. Let us postpone as far as possible the time of needing another general extension of the works, and meanwhile husband our resources and redeem the debt. The water debt once redeemed, the citizens of Jersey City can supply themselves with water for all time at about one half of the present rates.

Within the past year, we have completed a main sewer with its laterals in South First street, from Jersey avenue to the Hudson river. This sewer is believed to be in strict conformity to the general system of sewerage adopted by law. We are satisfied that very close adherence to that plan, particularly in respect to depth, is indispensible to the efficiency of the sewers A variation of but a few inches will materially obstruct that efficiency when the sewers come to be extended westward towards Bergen Hill. It is therefore necessary to guard the construction of sewers with constant watchfulness against errors in grade and depth. In the registrar's department the sewerage accounts and moneys are now altogether separated from all other accounts and moneys, as much so as if sewerage were a distinct department unconnected with any other. We have long felt that both accuracy and convenience required such an arrangement, and notwithstanding the immense labor involved in the inspection and analysis of all the past sewerage accounts in the books of the registrar, with the view of opening a distinct set of books and bank accounts for sewers exclusively, we now have the satisfaction of knowing the work has not been misapplied.

Within the past year a complete survey and description of all premises in Jersey City taxable for water has been completed, and a record made thereof.

This survey detected very many errors and imperfections in the previous registers of property. The survey has secured much pecuniary benefit to the city. We expect to extend this survey through Hoboken and other places supplied by us.

The deficiency of revenue to answer the large outlay for

repairs to the engine house, boiler house and pipes on the meadows has not disappointed us much. It is hoped, however, that no continuation of repairs and reconstruction upon so large a scale, will be necessary in the coming year upon any other parts of the works. Upon the coming in of a subsequent report from this board you will probably have a *resume* of the enlargement and its cost. We are now in the midst of these constructions, and give you the accounts as they stand on the 1st of July, 1863.

It should be borne in mind, that as our city is likely to extend with great rapidity during the coming ten years, there will be occasion for the continued extension of distribution pipes within the city. This expenditure must be represented by bonds and cannot be taken from the revenue of the work. Besides, it may be necessary at times to have a certain number of bonds prepared and on hand to be hypothecated for sewerage loans or other temporary loans that may occasionally be needed for a short time. For these purposes and to meet any deficiency of bonds for the perfecting of the enlargement of the works, if a second reservoir should be constructed at Bergen Hill, it may be proper to obtain legislative authority to issue sufficient bonds to answer all contingencies for a number of years to come. If any bonds authorized are not needed, we may hope that they will not be used, and it would not be amiss by a single act to preclude the necessity of troubling the legislature year after year for supplementary laws on this subject.

J. R. WORTENDYKE, *President.*
EPHRAIM PRAY,
GEO. McLAUGHLIN,
N. D. TAYLOR,
WM. CLARKE.

APPENDIX.

After the present reports were sent to the press it has become apparent that there has arisen in some way in many minds vagueness of impression as to the cost of the construction of the original works, and also as to the magnitude of the discrepancy between the opinions of the first commissioners and subsequent experience with regard to the length of time that the original capacity of the works would suffice to supply the demand, before a general enlargement was to be needed. The following brief observations upon these two points are therefore here appended, to guide such as feel sufficient interest to investigate these topics:

1. With regard to the cost of construction of the original works.

This account was closed on the 1st of July, 1857, by the board of that year, at $652,995.73, exclusive of interest. *Book of Reports*, p. 227.

The 11th section of the act of 1852, authorized 600 bonds of a thousand dollars each ($600,000) to be issued for the construction; and also bonds enough to pay all interest on these 600 bonds till the expiration of one year from the introduction of the water, that is to say, bonds to represent $600,000, and interest up to September 1, 1855—(the water rents having commenced September 1, 1854).

The commissioners issued 300 bonds July 1, 1852, and 300 more in February, 1853.

By *premiums* and accrued interest upon *moneys loaned out temporarily* by the commissioners pending the progress of the work, these 600 bonds realized the available sum of

about $645,000, being the accumulation of the proceeds of the 600 bonds.

On the first of July, 1854, the whole amount expended from the beginning of the works, was about $576,904 53, and the estimates of the sum yet wanted was a little over $60,000.

On the 1st of January, 1855, about $644,745.07 had been expended, being very nearly the *entire accumulation* from the 600 bonds. The work was not yet complete, as the account was closed in 1857 at $652,995.73, referred to above.

Now add to this all interest on 600 bonds up to September 1, 1855, (as per the 11th section of the act of 1852) *minus* $3,345.24 of surface tax paid in up to that date, and it will be found to amount to $701,644.76, which is the true limit to that part of the founded debt authorized by that section of the act. More was expended between September 1, 1855, and the closing of the account July 1, 1857. On September 1, 1855, 712 bonds had been sold, and before any of the present commissioners came into office, 725 bonds had been sold. $702,000 of these *were for original construction and interest* up to September 1, 1855, per the act of 1852; and the remaining $23,000 for "extension" of pipe, &c., under the act of 1854.

This subject has undergone elaborate investigation in a report of a committee of this board, dated January 2, 1861, which was printed and read to the common council. To that report, believed to be now on file in the city clerk's office, we beg leave to refer.

The further sale of bonds, beyond the 725 (actually sold before July, 1857,) has been and will continue to be for extension of the works, including the laying of new distribution pipes in streets not heretofore supplied, according to the purpose and plan of the first board and the intentions of the law, and for the purpose of exhibiting conveniently the progress of extension and enlargement of works by law requiring bonds, from July 1, 1857, when the original construction account was closed, up to July 1, 1863, the date to which

these reports relate, abstracts of the annual expenditures under this head are hereto appended.

These annual exhibits from July 1, 1857, to July 1, 1861, are extracted from a highly useful report of a committee of of this board, dated December 2, 1861, and printed. For the years 1862 and 1863 we have resorted to the July reports of these years.

II. Upon the other point of this Appendix, namely, the *discrepency* between the expectations of the *original board* and subsequent actual experience, as to the length of time that the original works would be of sufficient capacity for the demand. We shall refer to the first report of the board, dated December, 1851, and the appendix thereto, papers of very great value, well considered, and which will always be resorted to for guidance in certain matters of interest to these works. These documents are printed in our book on "*Water Supply and Sewerage*," pp. 45 to 101.

It there appears that the board set out with the expectation that these works would, in time, be required to supply a population of at least 250,000, within "the present limits of Hoboken and Jersey City, and that part of Bergen Hill lying south of a point sufficiently elevated for a distributing reservoir," p. 45.

It is further stated that a full supply of water "for all purposes, requires an average of at least 30 gallons per day for each person," p. 46. That is to say, 7,500,000 gallons per day for 250,000 inhabitants.

That about 500,000 gallons per day would be a *good supply* for the then population of Hoboken and Jersey City; but that as this population might double in ten years, the works should be construeted on a seale at the outset to furnish two or three times that number of people, p. 46.

The plan of the 20-inch main is recommended "as sufficiently extensive to supply a population of 66,666 persons with 30 gallons of water each per day," p. 58.

That 1,000,000 of gallons per day was all that would be required *for several years to come*, requiring pumping only *six hours* per day, p. 84.

That by the adoption of the plan recommended the works be made of a size adapted to the then present wants of the citizens and enlarged whenever the increase of the population requires, p. 85.

This shews the propriety of the plan adopted by the original commissioners; and we can, upon the recorded observations of years, based upon measurement by metre and the ascertained effects of the use of them, assure the public that the allowance of 30 gallons per day, for each person, ought to be a full supply for all purposes. Had any excess over this supply been charged for extra, from the beginning, we are almost morally certain that it would have been found far more than ample to this day for every want.

Now let us look at *the actual experience* of the subsequent boards to this time, as to the quantities of water that they have been called upon to furnish, to supply the *demand:*

In the year 1856, the average daily consumption was 581,000 gallons; for 1857, 1,000,000 gallons; for 1858, 1,425,000 gallons; for 1859, 1,732,000 gallons; for 1860, 2,076,000 gallons; for 1861, 2,216,000 gallons; for 1862, 2,316,743 gallons; and for 1863, 2,552,586 gallons. The whole capacity of the works was exhausted by the consumption of the last two years and every expedient resorted to by the board to keep the reservoir at Bergen Hill from being entirely emptied.

The head was reduced during the day time (except when fires broke out.) A watchman for this purpose was constantly on the alert. A telegraph wire communicated with the reservoir to notify the keeper to let on the full head in case of fire. Had the full head been allowed constantly on we should have been without a drop of water in the reservoir long ago. And had the supply been sufficient under a full head, the daily draft upon the Bergen reservoir for the last two years would have been little, if any, less than 3,000,000 gallons.

The population supplied in Jersey City, Hoboken, Lafayette and the water district of Hudson City, is not over 50,000.

So it will at once be perceived that instead of *thirty gallons per day* to each person, it would, even with the restraints of over one hundred metres already in use, have taken, under a full head, over 60 gallons per day to each person. Without the metres in use it would, if there had been water enough, have required not far from 70 gallons to each individual.

Hence the urgent necessity, under the circumstances, of hurrying forward the enlargement upon which we are now engaged.

We hold, at the same time, that 30 gallons per day is, for each individual, enough for all purposes. Could the system of measurement have been made universal *at the outset*, the 20-inch main would have sufficed for nearly 70,000 inhabitants.

The interest upon the present cost of the new 36-inch main would have been spared for perhaps four years, which would have been a saving of something like $100,000 in interest alone. This amount of money, as to any purpose, except for waste of water, may be considered as wholly thrown away, for want of restraint or compensation in the excessive consumption of water by waste.

Let these facts serve as a warning in time. With reasonable preventives against a repetition of the past experience as to unpaid destruction of water, the works will, when the present enlargement is complete, suffice for a population of 300,000 inhabitants. But without such measures they will be insufficient for 150,000 people.

ABSTRACTS.

Amounts expended for the Construction and Extension of the Water Works, from July 1st, 1857, to July 1st, 1863, represented by bonds.

From July 1st, 1857, to July 1st, 1858.

For Extension of Iron Pipe	$364 78	
For Extension of Cement Pipe	5,834 56	
For Extension of Pipe Laying	241 75	
For Extension of Stopcocks and Hydrants	483 04	
For Water Metre account	13 04	
		$6,937 17

From July 1st, 1858, to July 1st, 1859.

For Extension of Iron Pipe	$4,111 29	
For Extension of Cement Pipe	2,152 92	
For Extension of Pipe Laying	1,435 23	
For Extension of Stopcocks and Hydrants	570 44	
For Stand Pipe at Belleville	4,076 25	
For Water Metre account	169 22	
		12,515 35

From July 1st, 1859, to July 1st, 1860.

For Stand Pipe at Belleville	$4,707 70	
For Extension of Iron Pipe	2,500 43	
For Extension of Cement Pipe	1,349 93	
For Extension of Pipe Laying	1,249 82	
For Extension of Stopcocks and Hydrants	431 17	
For Water Metre account	308 97	
		10,548 02

From July 1st, 1860, to July 1st, 1861.

For Extension of Iron Pipe	$2,006 06	
For Extension of Cement Pipe	1,097 80	
For Extension of Pipe Laying	368 53	
For Extension of Stopcocks and Hydrants	159 05	
For New Pumping Engine	18,455 86	
For Water Metre account	242 45	
		22,329 75

From July 1st, 1861, to July 1st, 1862.

Extension of Iron Pipe		$39,398 64	
Extension of Cement Pipe		2,342 49	
Extension of Pipe Laying		843 21	
Extension of Stopcocks and Hydrants		1,314 09	
Water Metres		4,759 14	
New Pumping Engine	$9,740 98		
Less amount retained for one year from completion	5,000 00		
		$4,740 98	
Pipe Yard in Provost street, (purchase, &c.)		4,389 93	
Coal Houses at Engine House, Belleville		722 50	
Extension land account		488 00	
Main Pipe across the bottom of the Hackensack river,		10 86	
			59,009 84

From July 1st, 1862, to July 1st, 1863.

Extension Iron Pipe		$124,456 17	
Extension Cement Pipe		17,983 82	
Extension Pipe Laying		56,870 07	
Extension Stopcocks and Hydrants		3,734 20	
Extension Water Metres		820 37	
Main Pipe under Hackensack river		191 11	
Coal Houses at Engine Houses, Belleville		2,308 81	
Extension Buildings at Engine House, Belleville		2,450 00	
Wharf at Hackensack river		1,368 68	
			$210,183 23
Total			$321,523 36

SUPERINTENDENT AND ENGINEER'S REPORT.

OFFICE OF THE WATER COMMISSIONERS,
JERSEY CITY, July 1, 1863.

To the Board of Water Commissioners:

GENTLEMEN—The following report of the condition and operations of the water works, for the year ending June 30, 1863, is respectfully submitted:

CONDITION OF THE WORKS.

The repairs and improvements to the engine and boiler houses, reservoirs, and other portions of the works which have been in progress for the last eighteen months are now completed, and enable me to report the works generally, to be in a very satisfactory condition.

The expenditures required for these purposes have been larger than at first anticipated—but true economy, it is believed, has been consulted, by placing these structures in the most substantial and efficient condition—thereby removing what has heretofore proved a source of annual charge upon the water revenue.

PUMPING WORKS.

The pumping engines are in good working condition.

From the report of the engineer in charge of this department it will be seen that the engines have been in operation 3,582 hours and 50 minutes during the year.

The amount of coal consumed while pumping has been 1,144 tons.

For banking fires, 138 tons.

For blacksmith shop, engine rooms, and engineer's and firemen's dwellings, 21 tons.

Total amount of coal consumed during the year, 1,303 tons.

Of this amount 624 tons were bituminous and 679 tons anthracite coal.

Gallons of water pumped, 943,693,970.

ENGINE HOUSE, PASSAIC RIVER,
July 1, 1863.

ROBERT C. BACOT, Esq., *Superintendent and Engineer Jersey City Water Works:*

SIR:—I would respectfully report the usual annual statement of time made by the engines under my charge for the year ending June 30, 1863, together with monthly abstracts of work performed, and fuel, stores, &c., consumed.

The West Point engine has worked two thousand seven hundred and twenty-six hours and fifty minutes. The Jersey City engine eight hundred and fifty-six hours, making a total of three thousand five hundred and eighty-two hours and fifty minutes (3,582 50). I have also to report that on the 21st day of August last, after the Jersey City engine had been in operation about five months, an accident occurred to it, the nature of which you are already acquainted with, and which disabled the engine for a time. After the neeessary repairs had been eompleted, this engine was again put in operation on the 24th day of March, and has been regularly working since that time to my entire satisfaction; indeed both engines (the Jersey City and the West Point) are now in fair working order, but there are some suggestions which I would respectfully call your attention to, and which I think require your consideration.

Since the commencement of operations at these works it has never been possible to examine the base of the pumps, from the fact of the tides ebbing and flowing in the well, and as the West Point engine has now been in operation more than eight years, it becomes necessary to make such examination; future emergencies may easily occur when such

necessity will be apparent. To obviate this difficulty I would respectfully suggest that gates be attached at the end of the culvert in the well. The expense of this improvement would be slight compared with the vast benefit which would accrue to the works.

The largely increased demand for water has required a greater speed in the operation of the engines, and I find that the supply of water for perfect condensation is insufficient. I suggest, therefore, that a larger or an additional valve be attached to the condenser. This would also cause a diminished consumption of fuel.

From the present arrangement of our air pumps, and the high temperature at which the water is worked, a continual vapor arises, causing a dampness and general damage to the engine house; to obviate which I would suggest close stop pumps at a trifling expense.

From the limited capacity of the reservoir at Belleville, it has been necessary to keep up fire in the boilers almost constantly since their erection, giving but slight opportunity for examination or repairs. I would therefore suggest that two additional boilers be placed in these works at an early day.

By the erection of the blacksmith shop at this place we have been enabled to make ordinary repairs much more expeditiously than if the materials were prepared at a distance, and besides the great convenience of having such a shop upon the premises while extending the engine and boiler house, and coal sheds, and in making necessary tools, some economy will be eventually effected. Already the blackshith account shows a saving of $408, in the brief period of its operation.

The dock needs some slight repairs, also the screen work in front of gate house of culvert, and the crib-work on the north line of river front is in a dilapidated condition, which will require attention before winter.

All of which is respectfully submitted.

R. S. OSBORNE,
Engineer of Pumping Works.

Operations of the Pumping Works from July 1, 1862, to July 1, 1863.

Dates.	Engine.	Hours and minutes work of Engines.	Number of strokes of Engine.	Gallons of Water Pumped.	Pounds of coal used while pumping.	Pounds of Coal used for banking fires.	Ashes and clinkers removed from furnaces.	Gallons of oil used per month.	Pounds of tallow per month.	Pounds of cotton waste per month.	Pounds of hemp packing per month.
July, 1862,	West Point,	237.20	122,664	64,521,264	173,970	18,500	22,800	5	79	21	58
August, 1862,	Jersey City and West Point	308.45	148,330	78,021,580	190,666	20,700	29,000	10	77	27	75
September, 1862,	West Point,	284.45	136,281	71,683,806	197,073	23,700	26,300	15	75	28	20
October, 1862,	West Point,	302.15	144,560	76,038,560	212,563	24,100	24,800	15	83	24	24
November, 1862,	West Point,	264.	129,780	68,264,280	201,916	23,000	22,700	10	76	27	20
December, 1862,	West Point,	328.30	161,380	84,885,880	241,668	28,400	24,800	15	74	22	20
January, 1863,	West Point,	294.35	147,260	77,456,760	212,876	23,800	25,300	10	79	21	95
February, 1863,	West Point,	285.	144,879	76,206,354	206,160	27,900	22,900	10	77	24	20
March, 1863,	West Point,	314.10	163,238	85,866,188	230,770	27,600	25,600	15	75	23	20
April, 1863,	West Point and Jersey City	302.	156,136	82,127,536	217,664	25,200	24,000	10	72	26	50
May, 1863,	West Point,	308.	161,841	85,128,366	224,208	25,600	22,100	10	60	24	20
June, 1863,	Jersey City,	353.30	177,746	93,494,396	253,436	42,400	24,000	10	82	22	19
		3,582.50	1,794,095	943,693,970	2,562,970	310,900	294,300	135	919	289	441
								$142 30	$115 13	$107 94	$74 19

Ashes and clinkers removed from furnaces, about 10 per cent. of coal consumed.

CONSUMPTION OF WATER.

The consumption of water for the past year has been 931,694,000 gallons.

The daily average 2,552,586 gallons—of this amount—were used—

For ferries, railroads, steamboats, manufactories, and other than domestic purposes, 198,000,000 gallons.

For domestic purposes, 733,694,000 gallons.

The increase in the annual consumption is 87,325,415 gallons, and in the daily average 235,843 gallons.

AVERAGE DAILY AND ANNUAL CONSUMPTION OF WATER FOR THE PAST SIX YEARS.

Year ending.	Average daily consumption.	Annual consumption.
July 1858,	1,425,000	516,472,876
" 1859,	1,732,000	631,498,602
" 1860,	2,076,000	733,627,969
" 1861,	2,216,000	790,787,958
" 1862,	2,316,743	844,368,585
" 1863,	2,552,586	931,694,000

ENGINE HOUSE AND GROUNDS.

The repairs and improvements made to these buildings are as follows:

The exterior walls of the engine and boiler houses have been refaced throughout with hard coloback brick, laid up with hydraulic cement, the stone trimmings of the windows, cornice, &c., where defective, taken out and replaced with suitable stone from the Belleville quarry.

The roofs have been raised and the eves projected four feet clear of the exterior walls, thereby protecting the buildings from the injuries to which they were liable from the gutters being placed upon the top of the walls.

The boiler house has been extended on the easterly side, so as to accommodate two additional boilers, which will be required this fall.

The embankment of earth which covered the delivery

pipes, between the pumps and the stand pipe, has been removed, and a brick building, extending from the north side of the engine house to the stand pipe, has been built over them.

This allows of the necessary examination of these pipes, and the valves connected therewith, and repairs to them when neeessary, to be made with faeility.

A fifth seetion has been added to the coal houses, similar in all respeets to those erected last year. The eapacity of this building is now suffieient to conveniently accommodate 1,500 tons of eoal.

Particular attention has been directed to provide suitable drainage to earry off the heavy flow of water during the fall and spring, from the roofs of the engine house buildings, and from the high grounds in the rear. Cement drains 12 inches in diameter have been laid from the premises to the river, and seeure this object effectually. Shade trees and evergreens have been planted around the buildings and on the river lot, and add much to the pleasant appearance of the grounds.

The frame work in the river, at the entrance of the eonduit, has decayed so much that its entire renewal will be neeessary in a short time.

The eonduit from the river to the pump well is in good condition.

The frame buildings in the rear of the engine house, designed for the use of the engineers and firemen, are not sufficient to accommodate all the employees of the pumping works. Some are therefore obliged to have their residence in the village opposite. I would suggest that the purchase of the house and strip of land of $1\frac{1}{2}$ aeres, adjoining the engine house lot, would be a desirable acquisition in affording accommodation for the men on the premises, and in straightening the present irregular boundary line on the southerly side.

RESERVOIRS.

The repairs made to the reservoirs consist in the removal of the wooden steps leading to the top of the embankment;

and replacing them with granite, laid on brick foundations, the sides coped with blue stone. Shade trees have been planted on the road front of the Belleville reservoir.

The buildings formerly occupied by the Passaic Ice Company, for the storage of ice taken from the distributing reservoir, have all been removed, and the fences restored to the original lines of the enclosure. This portion of the grounds is now used for the storage of pipes, castings, &c.

The stone lining around the sides of this basin has settled slightly in two or three places. No permanent repairs, however, can be made to this and other portions of the reservoir, until an additional reservoir is provided, allowing the present one to be drained. The brick lining of the Belleville reservoir also exhibits in a few places indications of a similar settlement, and some anxiety is felt for its stability.

The discoloration of the Passaic water observed occasionally during the past two years, and which has been a subject of complaint by many of our citizens, although attributable during the fall and spring months to the freshets occurring at those seasons in the river, and common to all works thus supplied, yet, is in a measure owing at other times to the inability of removing from the reservoir the sediment and vegetable matter which has accumulated and been deposited in the course of nine years of use. In the construction of this basin no provision has been made for the purpose by dividing it into sections, as is usual by a wall or embankment, enabling one section to be kept filled, while the other is drained and being cleaned.

To remedy this important omission in the original construction, and maintain the water in its purity, no other resource seems practicable, except by providing an additional reservoir.

The rapid increase of population, together with the important public works and manufacturing interests, now in progress of establishment in this city and vicinity, make it sufficiently evident, that to secure this all important object—of maintaining a pure supply of water—as well as being prepared to meet the largely increased demands that will ere

long be made upon the works, early preparations for securing additional storage for the Passaic water should be made. Lands for this purpose, adjoining the present reservoir might be obtained at the present time at a comparatively moderate cost, which if deferred for a few years, will involve a heavy expenditure for their acquisition.

MAINS AND DISTRIBUTING PIPES.

The laying of the new 36-inch main from the gate chamber of the Belleville reservoir to the west side of the Hackensack river, a distance of 22,400 feet was completed in December last.

The cost of this portion of the main has been as follows:

WARREN FOUNDRY AND MACHINE COMPANY.

For iron pipes, at $37 per ton	$138,121 30
Patent Water and Gas Pipe Co., 2,000 feet pipes at $7.85 laid	15,700 00
Keeney & Halladay, contract for laying pipes including pileing, capping brick foundations and covering pipes	46,567 20
Three 36-inch stopcocks, aircocks, &c	1,345 00
Carpenters work and materials for boxing stopcocks, pipes, &c	657 50
	$202,391 00
Contingent expenses—Inspectors fees, horse and wagon hire and extra work by contractors	1,879 00
	$204,270 00

Operations for laying the portion east of the river and upon the western slope of the Bergen ridge, were resumed by the contractors in April last. This is now completed to within about 1,200 feet of the distributing reservoir at Hudson City.

An additional supply main from the distributing reservoir to the city having been determined upon, and a contract made with the Warren Foundry and Machine Company for

the pipes and castings, it will be laid and completed by the ensuing summer. 24-inch pipes will be laid from the reservoir through Bergen Wood avenue to the Five Corners, thence along Newark avenue to the foot of the hill, and be continued with 20-inch pipes to the main in Jersey avenue, with which it will be connected. A branch at the Five Corners will provide for the extension of this main when required to South Bergen and that neighborhood.

In the distributing or street pipes much inconvenience has been experienced in the western portions of the city—especially in cases of fires—from an inadequate supply of water. This deficiency is occasioned by the pipes not being connected at the cross streets, and the consequent want of proper circulation.

This is being remedied as fast as practicable by laying these connecting pipes.

The extensions of mains, distributing pipes, stopcocks, and hydrants made during the year is shown in the accompaning table :

Extension of Mains, Distributing Pipes, Hydrants and Stopcocks, from July 1, 1862, *to July* 1, 1863.

MAINS AND DISTRIBUTING PIPES.

SIZE.	LENGTH.	MATERIAL.	WHERE LAID.
Inch.	Feet.		
36	20,400	Cast Iron.	From Belleville Reservoir to west side Hackensack river.
36	3,450	do do	From east side Hackensack river towards Bergen Reservoir.
6	319	do do	Monmouth street, between South Seventh street and Railroad avenue.
6	360	do do	Prospect street, between Bay street and South Seventh street.
6	400	do do	Jersey Avenue, between North First street and Erie Railway.
6	51	do do	North Second street, across Jersey Avenue.
6	444	do do	North First street, from Jersey avenue to Erie street.
36	2,000	Wrought Iron and Cement.	On Belleville Ridge, (east slope).
12	882	do do do	South Eighth street, from Washington to Hudson street.
6	221	do do do	North Second street, east of Provost street.
6	220	do do do	North Sixth street, east of Grove street.
6	125	do do do	Provost street, between North Fourth and North Fifth streets.
6	460	do do do	Morgan street, from Warren to Washington streets.

Total, 29,322 feet, or 5 miles 2,922 feet.

STOPCOCKS.

Inch.	No.	
36	4	On Main, between Belleville Res'r and W. side of Hackensack river.
12	2	North Fifth street, at Provost street.
12	3	South Eighth street, between Washington and Hudson streets.
6	3	On 36-inch Main, at blow-off, on meadows.
6	2	Morgan street, between Washington and Warren street.
6	2	North First street, between Jersey avenue and Erie street.
6	1	North Sixth street, east of Grove street.
6	1	Prospect street, between South seventh and South Eighth streets.
6	1	Morgan street, corner of South Third street.
3	1	In Jersey City Ferry yard, York street.

FIRE HYDRANTS.

1 Provost street, between North Fourth and North Fifth streets.
2 Prospect street, between South Seventh and Bay streets.
1 Prospect street, corner South First street.
1 Grove street, corner North Sixth street.
1 Jersey avenue, corner South Sixth street.
2 Jersey avenue, between North First and North third streets.
1 Monmouth street, between South Seventh and South Eighth streets.
1 South Second street, between Grove and Prospect streets.
1 South Second street, between Grove and Erie streets.
1 South Second street, between Jersey avenue and Coles street.
1 South Second street, between Coles and Monmouth streets.
1 South Third street, between Grove and Erie streets.
1 South Third street, between Jersey avenue and Coles street.
1 South Third street, between Coles and Monmouth streets.
1 South Fourth street, between Coles and Monmouth streets.
1 South Fourth street, between Jersey avenue and Erie street.
1 South Sixth street, between Coles and Monmouth streets.
1 South Seventh street, corner Coles street.
1 South Seventh street, corner Brunswick street.
1 South Eighth street, between Grove and Erie streets.
1 South Eighth street, between Jersey avenue and Erie street.
1 South Eighth street, between Coles and Monmouth streets.
1 South Eighth street, between Colgate and Mersoles streets.
5 South Eighth street, between Washington and Hudson streets.
1 Bay street, between Prospect and Grove streets.
1 Morgan street, between Washington and Warren streets.

PRIVATE FIRE HYDRANTS.

2 Monitor Ship Yards, South Eighth street.
1 Sugar House, Bergen street.
1 Thompson & Gautier, Steel Works, Warren street.

36 Total.

Statement of pipe work connected with the Jersey City Water Works, to July 1, 1863.

PIPES.	36 inch.	26 inch.	24 inch.	20 inch.	16 inch.	12 inch.	10 inch.	8 inch.	6 inch.	4 inch.	3 inch.	Feet.
Laid prior to July 1, 1862....	2,743	3,505	96	38,472	2,861	16,623	885	512	88,916.6	9,660	3,261	167,534.6
Laid to January 1, 1863.....	25,850	.....	.....	.....	.....	882	.....	.....	2,600	.....	.....	29,332
Totals.....	28,593	3,505	96	38,472	2,861	17,505	885	512	91,516.6	9,660	3,261	196,866.6
In Hoboken.....	.....	.....	.....	.....	2,020	1,900	.....	.....	27,288	1,282	143	32,633
In Hudson City.....	.....	.....	.....	.....	.....	4,150	.....	.....	1,150	.....	.....	5,300
In Lafayette.....	.....	.....	.....	.....	.....	.....	.....	.....	4,400	.....	.....	4,400
												239,199.6

STOPCOCKS.

	36 inch.	26 inch.	24 inch.	20 inch.	16 inch.	12 inch.	6 inch.	4 inch.	3 inch.	Total.	Fire hydrants
In Jersey City.....	6	2	1	13	4	31	140	12	21	230	291
In Hoboken	.....	.....	.....	.....	1	1	41	2	.....	45	47
In Hudson City.....	.....	.....	.....	.....	.....	4	3	.....	.....	7	7
In Lafayette.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Totals.....										282	347

METRES.

One hundred and two metres are in operation in the city and vicinity; one hundred additional ones have been purchased and are placed upon services as fast as they are received from the maker. A material portion of the increase in the water revenue for the past year is owing to the extension of metres in supplying large consumers of water. In the supply to steamboats at the docks the increase of revenue is especially noticeable. This service, which, in the year 1860, was dispensed at an actual loss to the board, now produces an annual revenue of $3,300, without any expenditure whatever, except the original cost of the metres. In their application to manufacturing establishments the results are equally apparent. To cite one, of many similar cases constantly occurring, may be mentioned a manufactory which formerly paid $150 per annum for its estimated supply of water, now pays—since a metre was placed upon the service—at the rate of $1,475 per annum; and this at 1c. per 100 gallons.

The inequality of payments by private consumers, when charged according to rates regulated by the frontage and height of buildings, is made manifest by the following examples, taken from the records of metres placed upon a few private residences, offices, &c., in the city, viz.:

	Annual consumption in gallons.	By metre, at 1c. per 100 gallons, would pay.	By size of buildings, Number of stories, pays.
A building occupied by offices, eating houses, &c	3,729,570	$372 95	$89 00
1 private residence	1,126,025	112 60	15 00
1 private residence	246,740	24 67	14 00
1 private residence	71,175	7 11	15 00
1 private residence	42,705	4 27	12 00
1 private residence	39,000	3 90	12 00
1 private residence	84,000	8 40	15 00
1 tenement building	467,200	46 72	73 00

Statement showing the number and sizes and location of Water Metres (Worthington's) in use by the Jersey City Water Works, to June 30, 1863.

	SIZES.			
	Inch. 3	Inch. 2	Inch. 1	Inch. 5-8
RAILROADS AND FERRIES.				
New Jersey Railroad and Transportation Co., depot...	2			
" " " locomotive house	1			
" " " workshop.....			1	1
Erie Railway Co., passenger depot.....	1			
" " tank house.....	1			
" " locomotive house.....				
" " foundry.....	1			
" " workshop.....		1		
Jersey City and Bergen Horse Railroad, depot.....			1	1
Jersey City Ferry Co, ferry boats and houses.....	2	2		
Pavonia Ferry Co.....	1	1		
DOCKS AND PIERS.				
Delaware and Lackawana and W. Railroad docks.....	1	1		
W. I. B. Smith's coal docks.....	1			
Hudson County Dry and Wet Dock.....		1		
FOUNDRIES AND MANUFACTURING ESTABLISHMENTS, &C.				
Jersey City locomotive works.....	1	1		1
Jersey City and Hoboken gas works.....			1	
Jersey City pottery works.....				2
New York Railroad chair and spike works.....			1	
H. F. Cox's brewery.....		1		
Wallace's distillery.....			1	
Hoffman & Curtis's distillery.....		1		
Colgate's starch factory.....			1	
Colgate's soap factory.....			1	
Etna steel works.....			1	
Thompson & Gautier's steel works.....		1		
J. H. Gautier & Co., crucible works.....				1
Howell & Birdsall, boiler works.....				1
Moore & Force's oil factory.....				1
H. J. Baker & Co., oil factory.....			1	
Barrow's oil factory.....			1	
John Lyddon's oil factory.....			1	
Heinrich, Sommer & Co., oil factory.....				2
Van Syckle's oil factory.....				2
John Rodger's oil factory.....				1
Fairbanks & Co., scale factory.....				1
I. H. Trumbull, spice mills.....				1
Henry Steele & Son, iron foundry.....				1
Winslow Ames' spike factory.....				1
Battelle & Renwick's chemical works.....				1
James Udall's treenail factory.....				1
Culver & Simmon's iron foundry.....				1

	SIZES.			
	Inch. 3	Inch. 2	Inch. 1	Inh 5-8
Cummings & Son's car factory				1
American mills, spice and drug works			1	
David Kemp's iron foundry				1
J. L. Blackmore's iron foundry				1
Secor & Co., iron foundry			1	
Secor & Co., iron ship yard	1			
Secor & Co., turret shop				1
Cobb & Field's iron foundry				1
Crisman & Durbin's rolling mill			1	
Vanderbeck's planing mill				1
M. Graw & Co., "				1
Bay mills, drugs and spice works				1
White & Chilver's cement pipe works				1
Knight & Crawford's cement pipe works				1
George Mather & Son's ink factory				1
Stratford's oakum works			1	
Moon's machine works				1
Savery & Son's iron foundry				1
S. Billington's soap factory				1
Hudson River Cement Company				1
Thomas Andrews & Co., salaratus works			1	
Sugar house, Bergen street	1			
Hyett's slaughter house				1
Taylor & Erwin's slaughter house				1
D. Picken's dye works				1
Coast Wrecking Company, Morris street dock				1
W. O. Davey's oakum works, Hudson City			1	
R. H. Steele's laundry, Hudson City			1	
Roemelt & Licht, brewery, Hudson City			2	
Laidlaw's water cure, Hudson City			1	
James R. Dye, match factory, Hudson City				1
Mrs. Cable's laundry, Lafayette				1
J. B. Harvey's laundry, Belleville				1
Copper Mine Works, Belleville		1		
HOTELS, BOARDING HOUSES, ETC.				
Darcy buildings			1	1
Taylor's hotel				2
Mrs. Valentine, boarding house				1
Edge, tenement buildings				1
PRIVATE HOUSES.				
C. Fink, Washington house				1
E. E. Culver, Grand street				1
J. R. Wortendyke, Jersey avenue				1
R. C. Bacot, Jersey avenue				1
O. Cleveland, Wayne street				1
George McLaughlin, Grove street				1
J. Longstaff, Montgomery street				1
Louis Rutherford, Belleville			1	
R. S. Swords, Belleville				1
	14	11	23	54

3-inch 14, 2-inch 11, 1-inch 23, 5-8-inch 54—Total, 102.

SEWERAGE.

The main sewers in South First street have been completed and extend from the centre of Jersey avenue to tide water at the Hudson river. Lateral sewers, in Jersey avenue from South Second street, and in Erie, Grove, Prospect and Provost streets, connect with the main sewer. The sizes of the main and laterals, with the cost of the same, are shown in the annexed table. This sewer, like that in South Seventh street, when extended to the Mill creek, can be flushed out by the tide water, as contemplated by the general plan of sewerage.

Under this head, I would call the attention of the board to my report made January 1st, 1862, stating the inconvenience suffered by residents of the First and Second wards, from the imperfect drainage afforded by the old sewers in York, Henderson and adjacent streets, and the necessity of obtaining a legislative act to rebuild the York street sewer, according to the general plan of sewerage. These sewers having no proper outlet for discharging the matter received by them, are at present more than half filled up, and have become a subject of great complaint by the citizens of that part of the city.

All of which is respectfully submitted.

R. C. BACOT,
Superintendent and Engineer.

Statement of the length and cost of sewers and basins built in Jersey City under the general plan of sewerage. (Continued from the fifteenth report.)

SEWER.	Length of main sewer 3 by 4 feet, of 8-inch brick work.	Price per foot.	Amount.	Length of lateral sewer, 21 by 27 inches, of 8 inch brick work.	Price per foot.	Amount.	Feet of foundation timber, at $20 per M ft.	Amount.	Number of receiving basins.	At $85 each.	Cost of culverts to sewer.	Cost of mud and rock excavation.	Incidental expenses, interest, &c.	Total cost of sewer.	Assessment per lot, 25 by 100 feet.	Builders and when completed.
South First st. and Laterals. Hudson river to E. side of Grove st.....	Ft. Ins. 1,021.6	$2 74	$2,798 91	Ft. Ins. 381 6	$2	$763 00	Feet. B. M. 25,872	$517 44	4	$340 00	$91	$155 25	$479 40	$5,148 00	$84 74	Jno. H. McCabe, March 16, 1863.
South First st. and Laterals. E. side of Grove st. to centre of Jersey avenue.....	960.00	$2 80	$2,688 00	497.2	$2	$994 34	26,000 1,016	$519 98 5 08	5	$425 00	$123	$193 00	$395 55	$5,843 95	$80 20	Jno. H. McCabe, March 16, 1863.
Receiving Basin south east corner of York and Van Vorst sts.									1	$151 56			$6 50	$158 06	$8 56	S. & J. H. Keeney, June 1, 1863.

Average depth main sewer, Hudson river to east side Grove street, 15 feet 4 inches; laterals 11 feet 10 inches.
Average depth main sewer, east side Grove to centre Jersey avenue, 17 feet 6 inches; laterals 14 feet 2 inches.

REGISTRAR'S REPORT.

To the Board of Water Commissioners:

GENTLEMEN—I herewith present for your consideration my annual report for the year ending July 1st, 1863, with accompanying tables.

Total amount received from sale of Passaic water for year from July 1st, 1862, to July 1st, 1863, (as per Schedule B), is $99,923.99

The increased amount of income for year ending July 1st, 1863, over previous year, is $21,223.74.

The estimated amount of income from sale of the Passaic water, during the coming year, (as per estimate reported May 1st, 1863, hereto annexed), is $101,886.42.

Total amount received from the sale of the Passaic water from the introduction into the city September 1st, 1854, to July 1st, 1863, is (as per Schedule G), $553,718.76.

Total number of Jersey City Water Loan Bonds issued for construction and extension of the water works, from their commencement to July 1st, 1863, is 1,057 bonds of $1,000 each, $1,057,000; less total number of bonds redeemed by sinking fund up to July 1st, 1863, is 19 bonds of $1,000 each, $19,000—making total amount of water loan unredeemed July 1st, 1863, $1,038,000.

Total amount expended for interest on bonds, management and repairs of works for year from July 1st, 1862, to July 1st, 1863, (as per Schedule C). is $108,262.93.

The estimated expenditures for interest on bonds, management and repairs for the coming year (as per estimate reported May 1st, 1863, and hereto annexed), is $89,500.

The amount expended for extension of the water works for year from July 1st, 1862, to July 1st, 1863, (as per Schedule D), is $210,183.23.

The issue of Jersey City Water Loan Bonds on account of extension of the works for year from July 1st, 1862, to July 1st, 1863, (as per Schedule D), is 246 bonds of $1,000 each, $246,000.

The balance in sinking or redemption fund this date, July 1st, 1863, (as per Schedule E), is $19,635.61.

Total amount expended for the construction, &c., of the various sewers, culverts and basins, from their commencement to July 1st, 1863, (as per Schedule F), is $150,681.76, (exclusive of interest paid on sewerage loans to date).

Total amount received from assessments for the various sewers, culverts and basins to July 1st, 1863, (as per Schedule F), is, principal, $140,428.56, interest, $10,566.76—total, $150,995.32.

Respectfully submitted,

G. S. BOICE, *Registrar.*

OFFICE OF THE WATER COMMISSIONERS,
CITY HALL, Jersey City,
July 1st, 1863.

Schedule A.

An estimate of sources of revenue to be derived from the Jersey City Water Works for the year commencing May 1st, 1863.

No.	Story.							Per annum.	Total.
10	5	Front buildings between			15	and 20	feet front	$12 75	$127 50
1	5	"	"	"	"	40	"	24 00	24 00
1	5	"	"	"	"	50	"	28 50	28 50
7	4	"	"	"	25	30	"	16 00	112 00
6	4	"	"	"	30	40	"	21 00	126 00
3	4	"	"	"	40	50	"	25 00	75 00
1	4	"	"			12—9	"	10 50	10 50
85	4	"	"	"	20	25	"	14 00	1,190 00
8	4	"	"	"	15	20	"	11 25	90 00
2	3½	"	"	"	30	40	"	19 50	39 00
4	3½	"	"	"	25	30	"	15 00	60 00
24	3½	"	"	"	20	25	"	13 00	312 00
4	3½	"	"	"		16—8	"	10 50	42 00
11	3	"	"	"	40	50	"	21 50	236 50
15	3	"	"	"	30	40	"	18 00	170 00
42	3	"	"	"	25	30	"	14 00	588 00
1022	3	"	"	"	20	25	"	12 00	12,164 00
331	3	"	"	"	15	20	"	9 75	3,227 25
49	3	"	"		less	15	"	9 00	441 00
6	2½	"	"	"	40	and 50	"	19 75	118 50
5	2½	"	"	"	30	40	"	16 50	82 50
6	2½	"	"	"		30	"	13 00	78 00
242	2½	"	"	"	20	25	"	11 00	2,662 00
57	2½	"	"	"	15	20	"	9 00	513 00
12	2	"	"	"	40	50	"	18 00	216 00
21	2	"	"	"	30	40	"	15 00	315 00
16	2	"	"	"	25	30	"	12 00	192 00
766	2	"	"	"	20	25	"	10 00	7,660 00
360	2	"	"	"	15	20	"	8 25	2,970 00
163	2	"	"	"	less	15	"	7 50	1,222 50
1	1½	"	"	"	30	and 40	"	13 50	13 50
29	1½	"	"	"	20	25	"	8 75	253 75
7	1½	"	"	"	15	20	"	7 50	52 50
2	1½	"	"	"	less	15	"	6 75	13 50
2	1½	"	"	"				10 50	21 00
4	1	"	"	"	40	and 50	"	13 50	54 00
64	1	"	"	"	20	25	"	6 50	480 00
56	1	"	"	"	15	20	"	6 75	378 00

62	1	"	"	"	less	15	"	$6 00	$385 00
4	1	"	"	"	"	15	"	5 00	20 00
2	1	"	"	"				12 00	24 00
4	1	"	"	"				9 00	36 00
1	3	"	"	"	25 and	30	"	9 33	18 66
42	3	"	"	"	20	25	"	8 00	366 00
13	3	"	"	"	15	20	"	6 50	84 50
1	2⅓	"	"	"		16	"	6 00	6 00
7	2⅓	"	"	"	20	25	"	7 33	51 31
147	2	"	"	"	20	25	"	6 67	1,046 49
3	2	"	"	"		26	"	8 00	24 00
14	2	"	"	"	15	20	"	5 50	77 00
9	2	"	"	"	less	15	"	5 00	45 00
10	1⅓	"	"	"	20 and	25	"	5 84	58 40
2	1½	"	"	"	less	15	"	4 50	9 00
1	1½	"	"	"		27	"	7 00	7 00
3	1	"	"	"	20 and	25	"	5 00	15 00
1	1	"	"	"		50	"	13 50	13 50
1	1	"	"	"	less	15	"	4 00	4 00
3773									$38,606 86
1451	vacant lots, 25x100, at							2 50	3,627 50
110	water closets, at							5 00	550 00
124	extra water closets, at							2 00	248 00
74	extra wash hand basins, at							1 00	74 00
172	extra beds, at							1 00	172 00
225	extra families, at							1 00	225 00
10	extra baths, at							3 00	30 00
118	street washers, at							3 00	564 00
35	urinals, at							5 00	175 00
261	bars, at							5 00	1,305 00
4	private fire hydrants, at							5 00	20 00
231	private stables, one story high, at							5 00	1,155 00
96	private stables, two story high, at							7 50	719 00
	Livery stables and extra stalls								209 00
475	extra horses and mules, at							2 00	950 00
22	butcher stalls, at							3 00	66 00
3	butcher stalls, at							5 00	15 00
10	fish stalls, at							5 00	50 00
13	vegetable stands, at							3 00	39 00
3	vegetable stands, at							5 00	15 00
150	cows, at							1 00	150 00
	Factories, foundries, &c., building tax								1,280 00
	Stone yards								15 00
	Churches								208 06
14	green houses, at							12 00	168 00
	Measured water to factories, foundries, &c								7,500 00
	Measured water to Jersey City Ferry Company								2,000 00

Measured water to New Jersey Railroad Company...	$2,500 00
Measured water to N. Y. and E. Railway and Ferry Co.,	4,000 00
Measured water to B. and N. A. Royal Mail Steam Packet Company.....	2,000 00
Measured water to steam boats supplied at docks....	3,000 00
Receipts from shipping.....	750 00
Water rents Hoboken City, including Hoboken Ferry,	20,000 00
Water rents Hudson City.....	2,000 00
Water rents Lafayette.....	500 00
Corporation Jersey City, public buildings, hydrants, engine houses.....	2,000 00
Arrears unpaid water rents, 1856, 58, 59, 60 and 62,	5,000 00
	$101,886 42

EXPENDITURES.

Interest.....	$66,000 00
Repairs of pipe works.....	2,500 00
Repairs and improvements at engine house and reservoirs.....	1,000 00
Fuel and carting the same, 1,200 tons of coal.....	8,000 00
Engineers, fireman's and laborers wages.....	4,000 00
Salaries of officers.....	5,750 00
Office expenses and incidental expenses.....	1,000 00
Repairs and management of water metres.....	250 00
Repairs and management of stopcocks and hydrants.....	500 00
Contingent expenses.....	500 00
	$89,500 00

RECAPITULATION.

Revenue from 3,773 buildings.....	$38,606 80	
Revenue from vacant lots.....	3,627 50	
Revenue from Miscellaneous charges.....	8,402 12	
Revenue from Hudson City, Hoboken City, Lafayette, measured water to railronds, factories, foundries, ferries, steamboats, &c.....	51,250 00	
		$101,886 42

CONTRA.

Expenditures for interest, repairs and improvements, fuel, salaries, &c., &c.....	$89,500 00	
Balance.....	$12,386 42	

Schedule B.

Statement of all moneys actually received as revenue from the Water Works from July 1st, 1862, to July 1st, 1863.

Received from water rents on buildings, vacant lots, and measured water to factories, foundries, steamers, steamboats, ferries and railroads, &c., to wit:

Arrears water rents, 1856, 1857	$85 71	
Arrears water rents, 1858, 1859	201 08	
Arrears water rents, 1859, 1860	366 78	
Arrears water rents, 1860, 1861	308 20	
Arrears water rents, 1861, 1862	5,737 89	
Arrears water rents, 1862, 1863	16,343 86	
Arrears water rents, part of year 1863, 1864	33,450 76	
		$56,494 28
Penalties water rents, 1860, 1861	31	
Penalties water rents, 1861, 1862	473 48	
Penalties water rents, 1862, 1863	1,022 52	
		1,496 31
Interest penalties water rents, 1856, 1857	83 68	
Interest penalties water rents, 1858, 1859	123 80	
Interest penalties water rents, 1859, 1860	187 42	
Interest penalties water rents, 1860, 1861	84 33	
Interest penalties water rents, 1861, 1862	800 78	
Interest penalties water rents, 1862, 1863	151 52	
		1,431 53
Advertising arrears water rents, 1856, 1857	2 00	
Advertising arrears water rents, 1861, 1862	40 00	
		42 00
Received water rents from Hudson City		1,912 91
Received water rents from Hoboken City		19,796 50
Measured water to factories, foundries, &c		6,304 19
Measured water to steamboats		3,301 48
Measured water to Cunard steamers		1,625 00
Measured water to railroads and ferries		6,777 67
Receipts from shipping, street sprinkling, &c		742 12
		$99,923 99

Schedule C.

Statement of moneys actually paid out from July 1st, 1862, to July 1st, 1863, for the following purposes, viz: the interest on bonds or scrip, the expenses for maintaining the works, and for raising and distributing the water, for salaries, for wages, and for incidental expenses.

For interest coupons		$59,104 44
MANAGEMENT AND REPAIRS.		
Repairs and management at engine house	$19,879 34	
Repairs and additions to pumping engines	944 98	
Fuel and oil, &c	7,886 14	
Repairs and improvements at Bergen Hill reservoir	2,085 61	
Repairs and improvements at Bellville reservoir	787 32	
Repairs at pipe box	647 82	
Repairs and improvements at Passaic river	940 81	
Repairs, &c., to stop-cocks and hydrants	1,252 41	
Repairs to pipe—main and service	1,194 24	
Repairs and additions to water metres	246 71	
Horse and wagon, &c., account	1,117 78	
Repairs, &c., to pipe yard	393 63	
Repairs and additions to stand pipe	287 55	
		37,664 34
Salaries of superintendent and engineer, registrar, registrar's assistant, water purveyor and printer	4,843 81	
Engineer's and fireman's wages	3,260 98	
		8,104 79
Office expenses, stationery, books and stamps	1,149 26	
Insurance taxes, legal expenses, incidental expenses, &c	2,240 10	
		3,389 36
		$108,262 93
RECAPITULATION OF RECEIPTS AND EXPENDITURES.		
Total expenditures from July 1, 1862, to July 1, 1863	$108,262 93	
Total receipts from July 1, 1862, to July 1, 1863	99,923 99	
Deficiency	8,338 94	

Schedule D.

Amounts expended for extension of the Water Works from July 1st, 1862, to July 1st, 1863.

Extension iron pipe	$124,456 17	
Extension cement pipe	17,983 82	
Extension pipe laying	56,870 07	
Extension stop cocks and hydrants	3,734 20	
Extension water metres	820 37	
Main pipe under the Hackensack river	191 11	
Coal houses at engine house, Belleville	2,308 81	
Extension buildings at engine house, Belleville	2,450 00	
Wharf at Hackensack river	1,368 68	
		$210,183 23

STATEMENT OF THE SALE AND REDEMPTION OF JERSEY CITY WATER LOAN BONDS, FROM JULY 1ST, 1862, TO JULY 1ST, 1863.

Total number of bonds sold from July 1st, 1862, to July 1st, 1863, is 246, $1,000 each	$246,000 00	
Purchased by the Sinking Fund, 2 bonds, Nos. 101 and 232, of issue payable 1877, (and the same were cancelled per resolution of the board)	2,000 00	
		$244,000 00

RECAPITULATION.

Total amount realized from sale of bonds from July 1st, 1862, to July 1st, 1863	$246,000 00	
Total amount of extension from July 1st, 1862, to July 1st, 1863	210,183 23	
Excess	$35,816 77	
Excess of bonds issued during year from July 1st, 1862, to July 1, 1863, over expenditures for extension of the works for said year		35,816 77
Amount expended for extension of the works from July 1st, 1857, up to July 1st, 1861, over bonds sold on said account is, per report finance committee, December 2d, 1861	$42,330 29	
Less amount bonds issued over expenditures on account extension, per report July 1, 1862, for year ending that date	16,990 16	
		$25,340 13
Issue over expenditures on account of extension, July 1, 1863		$10,476 64

The extension of the works still in progress requiring continued sale of bonds.

Schedule E.

Sinking or Redemption Fund.—Statement showing the transaction during the year, and position of the account July 1st, 1863.

Balance in fund July 1, 1862, per last report.....		$21,101 61
Jan. 2, 1863, received amount interest accrued on 21 bonds, from July 1, 1862, to January 1, 1863, held by fund.....		630 00
		$21,731 61

CONTRA.

October 6, 1862, amount drawn to pay interest accrued on six Jersey City water loan bonds, (purchased as investment, this date), from July 1, 1862, to October 6, 1862.....	$96 00	
April 6, 1863, amount drawn from fund to purchase two of the Jersey City water loan bonds of issue payable 1877, Nos. 101 and 232, at par, (the same being cancelled in presence of the board, this date).	2,000 00	
		2,096 00
Balance in sinking fund, July 1, 1863,		$19,635 61

POSITION OF THE SINKING FUND BALANCE.

On deposit in the Bank of Jersey City, to credit of fund	$635 61	
Nineteen of the Jersey City water loan bonds, viz: fifteen of issue payable 1883, of $1,000.00 each, Nos. 802, 803, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 818, 819, 820; four of issue payable 1891, of $1,000.00 each, Nos. 994, 995, 996, 997...	19,000 00	
		$19,635 61

Schedule F—Sewerage.

Statement showing the total amounts paid for construction of the various sewers, culverts and basins constructed by the board, also amounts received as principal and interest, from the commencement of same to July 1st, 1863.

	Dr.	Cr. Principal.	Int. rec'd.
Sewer in Essex street and laterals	$12,527 09	$12,348 42	$152 30
Sewer in South Third street and laterals	20,698 96	20,746 14	1,015 11
Sewer in Wayne street, Railroad and Newark avenues and laterals	47,635 33	41,581 52	4,429 96
Sewer in Grand street and laterals	13,781 60	11,961 40	2,035 40
Sewer in South Fifth street and laterals	22,021 80	21,902 37	1,899 29
Sewer in Grove and York streets and laterals	3,205 52	3,208 33	55 87
Sewer in South Seventh street and laterals	16,827 70	16,666 75	916 31
Sewer in South First street, from E. S. Grove street to Hudson river, &c	5,412 16	4,137 42	8 35
Sewer in South First street, from E. S. Grove street to centre of Jersey avenue, &c	5,343 95	4,315 83	5 20
Culvert and basin, corner Grove and Montgomery streets	112 25	92 05	
Culvert and basin, corner Morris and Greene streets	228 58	243 70	4 82
Culvert and basin, corner Grand and Greene streets	101 86	104 26	4 41
Culvert and basin, corner York and Greene streets	210 52	218 01	19 30
Culvert and basin, corner Newark avenue and South Sixth street	132 19	152 51	10 87
Culvert and basin, corner York and Warren streets	115 18	130 18	7 14
Culvert and basin, north side Steuben street, between Prospect and Warren streets	136 55	83 78	1 53
Culvert and basin, south side Steuben street, between Prospect and Warren streets	131 50	80 18	90
Culvert and basin, southeast corner York and Van Vorst streets	154 56	85 41	
Sewerage account, for tapping, &c	1,854 46	2,370 30	
	$150,681 76	$140,428 56	$10,566 76

RECAPITULATION.

Amounts paid for construction, &c	$150,681 76
Amounts received on assessments	140,428 56
Balance due from ass't	$10,253 20
Interest collected from arrears up to July 1st, 1863	10,566 76

Schedule G.

The following table exhibits the yearly revenue received from the sale of Passaic Water since its introduction into the city, September 1, 1854.

From September 1, 1854, to May 1, 1855, (two thirds of a year)	$13,757 88
Fram May 1, 1855, to May 1, 1856,	28,777 54
From May 1, 1856, to July 1, 1857, (one year and two months)	58,961 95
From July 1, 1857, to July 1, 1858	55,607 37
From July 1, 1858, to July 1, 1859	71,700 19
From July 1, 1859, to July 1, 1860	76,538 59
From July 1, 1860, to July 1, 1861	69,751 00
From July 1, 1861, to July 1, 1862	78,700 25
From July 1, 1862, to July 1, 1863	99,923 99
Total revenue received from Sept. 1, 1854, to July 1, 1863,	$553,718 76